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## James Heckman as a Law and Society Scholar: An Appreciation

Peter Siegelman

I want to thank the editors of *Law and Social Inquiry* for giving me the chance to convey my immense admiration—indeed, *reverence* would not be too strong a word—for James Heckman and his work, on the occasion of his being awarded the 2000 Nobel prize in economics. It's a great pleasure to be able publicly to acknowledge my personal and professional debts to Jim; but I've come to realize that it's also a great burden to have to say something worthy of the occasion and the person. Jim's own writing tends toward the terse rather than the expansive. In that spirit, the tersest thing I can say that adequately conveys the importance of his work is that I'm certain that people will still be reading and talking about both his methodological and substantive ideas 100 years from now.<sup>1</sup>

The economics profession traditionally organizes a celebration-cum-scholarly assessment of those who win the Nobel prize each year, and others will no doubt write with great insight about Heckman's contributions to economics and econometrics. Since *Law and Social Inquiry* is an eclectic journal of sociolegal studies, however, I have defined my role somewhat differently. I will argue here that Heckman's work has, or should have, many commonalities with the best of the law and society tradition. Some of the language and techniques he deploys might sound foreign or off-putting to

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1. Need I add that much of contemporary social science has a shelf life of only one-tenth or one-twentieth that long?

some readers of this journal. But—at least implicitly—much of his work considers themes and concerns that make him a natural ally of all those who seek a better understanding of the complex relationship between the legal system and the larger social world of which it is a part.

Given the magnitude of the task that confronts me, I wish to explicitly renounce any claims to completeness or representativeness.<sup>2</sup> I will be offering a tiny and nonrandom sample of Heckman's work to substantiate my argument.<sup>3</sup> And if any economists read this, I hope they'll forgive me for my Classic Comics treatment of some complex ideas.

## SELECTED SAMPLES: WHAT DO THE DATA MEAN?

Heckman's Nobel citation was "for his development of theory and methods for analyzing selective samples." In oversimplified form, what this means is that he developed techniques for analyzing samples of individuals when the individuals themselves *choose* whether or not they will appear in the sample.<sup>4</sup> Social scientists know that life doesn't usually throw up many random samples; on the contrary, humans are constantly making choices that influence how likely they are to appear in some context (attending college, participating in the paid labor force, being convicted of a crime), so that those who do appear are quite likely to be different from those who don't. Thus, the problem of selected or choice-based sampling occurs in almost every setting of interest to social scientists, which is why Heckman's work is so important and has been so widely used.

For example, consider the group of people who fail to complete high school and instead go on to obtain a graduate equivalency degree (GED). Since all dropouts can and do choose whether or not to get a GED, those who do so are unlikely to be a nonrandom sample of all dropouts: GED-seekers may well have more "motivation," or better high school grades, or

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2. Although I ignore the intellectual context in which Heckman has worked, I do not want to suggest that he is the only economist working on the questions I discuss below. Indeed, he would be the first to acknowledge that many others have addressed these concerns. My argument only requires me to show that he has made foundational contributions to solving these problems, not that no one else has.

3. For those readers who appreciate quantitative measures, Heckman's CV is 22 pages long, and I confess that much of it is simply inaccessible to me except at a very general level.

4. The classic paper is Heckman (1979), which developed a technique that is now standard in every statistical software program. Its particular contribution was to show that choice-based samples could be handled by developing a participation equation that predicts which individuals will choose to be in the sample (e.g., who will attend college) and which won't. One can then use the estimated probability that a given individual will participate in the sample from this first-stage equation as an explanatory variable in the second stage equation that is actually of interest (e.g., the effect of college attendance on subsequent earnings).

The more general point about selection applies equally to qualitative or interpretivist researchers, in any context in which people's choices determine whether they show up in your research or not: those who are willing to talk to you (or who show up in your archives) may be substantially different from those who are not or don't.

more prior labor force experience than those dropouts who don't pursue a GED. Hence, if you want to know about the effect of getting a GED on subsequent earnings (or anything else), you can't simply compare the earnings of GED-earners with those of other high school dropouts; the two groups may differ systematically from each other in ways apart from the fact that one group all has GEDs and the other doesn't.<sup>5</sup>

Or, since the parties and the judge jointly make decisions that determine whether a filed case generates a published opinion or not, cases with published opinions are likely to be systematically unrepresentative of all filed cases. If you want to know about the universe of filed cases, you can't simply generalize from those cases that have published opinions. And so on and on.<sup>6</sup>

The insight that what we observe may be a biased (systematically unrepresentative) sample from the world we are trying to study is a profound one indeed. It has obvious implications for anyone interested in studying law and how it shapes, and is shaped by, the rest of the world in which it is situated. The flip side of this insight is that we will often need to think very carefully indeed about the mechanism by which "the real world" is presented to us. Both of these insights—or, at any rate, the formal techniques for dealing with them using quantitative data—should be credited to Jim Heckman.

Apart from developing techniques that can be of great use to law and society scholarship, Heckman has another important commonality with many law and society scholars—he's a methodologist who is more often than not motivated by real-world empirical questions, often questions that involve collecting his own data. The prevailing wisdom in economics these days was well put by one highly respected scholar who told a graduate student that "no serious researcher should ever feel the need to gather his own data," presumably because the payoff to this difficult and unglamorous task is low relative to the costs, and the task is better left to government bureaucrats or unimaginative drones. One of the most impressive things about Heckman is that he has consistently defied this conventional wisdom. Indeed, he is one of the very few economists who have both made foundational contributions to econometric methodology *and* gotten their hands

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5. See, e.g., *The Nonequivalence of High School Equivalents* (Cameron and Heckman 1993). As their title suggests, the authors find abundant evidence of selection and conclude that, once this is accounted for, students with GEDs do not earn more than high school dropouts without GEDs (and, of course, do not earn as much as high school graduates).

6. One distinguished statistician once wrote that "if you catch fish with a net having a 6-inch mesh, you are liable to formulate the hypothesis that all fish are more than 6 inches in length" (when in fact all you have done is screened out the smaller fish by your sampling technique) (Good 1968, 5:292).

It is surprisingly easy to make a deep insight seem trivial. When James Tobin was awarded the Nobel prize in Economics in 1981, for example, he summarized his contribution as "Don't put all your eggs in one basket."

dirty gathering and working with real, messy data.<sup>7</sup> This automatically makes him in some sense a comrade in arms of those in the law and society who venture into the real world to observe things at firsthand.

## LAW'S ENDOGENEITY: CAUSE AND EFFECT

Let me start with a point that should be obvious to all law and society readers (and to all economists as well), though it sometimes isn't. Law, rather than being determined or imposed apart from or outside of the factors one is studying, is often "endogenous"—meaning loosely that law is often both cause and effect. This in turn implies that whenever we seek to investigate the relationship between law and anything else, we always have to ask ourselves whether:

- (a) law is causing the behavior/understanding/etc.; or
- (b) both law and behavior are jointly caused by some other underlying factor(s); or
- (c) the behavior is causing the law, or—the most likely case;
- (d) some combination of the above is at work.

Economists—and especially those doing empirical work in law and economics—have at times been somewhat naive in this respect, treating law as if it were like the weather: something that drops out of the sky like rain, falling "on the just and on the unjust"<sup>8</sup> alike, but that is itself uninfluenced by any terrestrial behavior.

So what if law is endogenous—why does it matter? The reason is that if law is endogenous in the sense I have described it, thinking about relationships between law and any phenomenon of interest becomes a lot more complicated. In fact, standard quantitative techniques are guaranteed to produce incorrect answers, sometimes even getting the direction of the effect wrong.<sup>9</sup>

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7. For example, Heckman supervised the collection and analysis of a massive data set used to evaluate the Job Training Partnership Act. His paper with Brook Payner (1989) required the collection of 80 years of data on the South Carolina textile industry, including not just quantitative data, but also historical records of the industry's business association and so on.

8. 5 Matt. 45. E.g., a recent study found that the presence of laws that increased a worker's legal protection against unjust dismissal raised a state's unemployment rate by roughly 4% (e.g., from 6 to 6.24%). The authors' analytic strategy only makes sense if one assumes that the underlying reality is: change in law → change in unemployment rate. It seems equally plausible, however, that what's really going on is: change in law ↔ change in unemployment rate, perhaps because rust-belt states, facing declining labor demand and rising unemployment rates, wanted to expand workers' protection against unfair firing. When states with high unemployment rates adopt more worker-friendly discharge laws, then the story becomes much more complicated and standard methods go badly awry.

9. These difficulties obtain whether one's approach is quantitative or qualitative: the complexity of the underlying relationships is the same, no matter kind of data one is using,

In a paper endearingly titled "Simultaneous Equation Models with Both Continuous and Discrete Endogenous Variables with and without Structural Shift in the Equations" (1976), Heckman confronts this quintessentially law and society insight about law's endogeneity and develops a statistical technique for taking account of the problem. The empirical motivation for this paper was an important early work on empirical law and economics by William Landes on the effects of state antidiscrimination laws on the earnings and employment of blacks (Landes 1968).<sup>10</sup> Landes treats the presence or absence of a state antidiscrimination law as an "on/off," or dummy, variable and essentially looks at whether blacks have higher earnings and/or unemployment in states where the law is "on" than in those where it is "off," controlling for a few other factors.<sup>11</sup>

Heckman points out, however, that it is implausible to think that antidiscrimination laws are randomly assigned to states, an assumption that is implicitly necessary if Landes's approach is to produce reasonable results. A more appropriate way to formulate the problem is to assume that individual states have a certain level of pro-black "sentiment" that determines both (a) whether a law is passed prohibiting discrimination and (b) how blacks are generally treated in the labor market by employers.<sup>12</sup> An important question, then, is whether the "measured effects of the legislation are due to genuine consequences of legislation [itself] or to the spurious effect that the presence of legislation favorable to blacks merely proxies the presence of pro-black sentiment that would lead to higher status for blacks in any event" (Heckman 1978, 933). In the end, it turned out that Landes's conclusion that state fair employment laws raised both earnings and unemployment rates for black males didn't seem to change much when proper account was taken of legal endogeneity. But the point is that one can't know this until one has recognized the problem and addressed it, which Heckman's work permits one to do.

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and inferences about such relationships are no more plausible merely because one is employing words rather than numbers or using informal rather than formal techniques. In other words, an anthropologist studying the effect of unjust dismissal laws on workers' sense of self-worth using ethnographic data will face the same problems alluded to in the previous note, even if she or he isn't aware of these issues.

10. Landes used data from before the passage of title VII of the 1964 Civil Rights Act, since after the act was passed, there was of course no longer any cross-state variation in law to use in explaining interstate differences in black earnings.

11. Sadly, there is still too much work in social science that treats law as a simple on/off-present/absent variable. Heckman is an eloquent critic of this view and has long recognized that our inability to capture variation in law severely limits empirical inquiry into many important topics, requiring special ingenuity from researchers. Writing about the proposition that the "post- 1964 improvement in black status was due to government policy" Heckman noted that "the econometric evidence supporting [the] position is weak in large part because available measures of Federal activity or pressure [measures of how 'on' the law was] are weak" (Donohue and Heckman 1991, 1604).

12. The word *sentiment* is being used here as a shorthand for what could easily be an even more complicated analysis of political power, culture, etc.

Heckman's concern for the endogeneity of law is also evident in his paper with John Donohue that examines the effects of the 1964 Civil Rights Act (Donohue and Heckman 1991). The authors document large and abrupt changes in black economic status beginning shortly after the passage of the 1964 Civil Rights Act. But how do we know it was the law *per se* that made a difference, rather than just a gradual shift in white public opinion against labor market discrimination that caused both the law and the improved outcomes for black workers? The evidence strongly suggests that the improvement in black labor market prospects was much greater in the South than in any other region, and it was precisely in the South where the law was resisted most aggressively by the white population. If law were merely proxying for an underlying shift in attitudes toward blacks, we would expect to see no effect in the South and a bigger effect in the North (where both attitudes and law were pushing in the same direction.)<sup>13</sup>

In sum, Heckman knows and believes one of the big truths that law and society research has consistently stressed: Law is both cause and effect. Not only does he know it, he has developed techniques for tackling the problems posed by this simultaneity and applied them to some of the most important issues of the day.

### INCENTIVES VS. CONSCIOUSNESS SHAPING: WHAT DOES LAW DO?

The standard view in economics is that law is ultimately little more than prices by another name: law provides incentives for behavior, in response to which people are "law-takers" in much the same way that they are "price-takers" in ordinary markets. Do you want less crime? Then pass a law raising the sanctions for robbery, burglary, and so forth. Want more college attendance? Subsidize tuition. Want promisors to breach contracts only when it is efficient to do so? Set damages for breach equal to the promisee's lost profits. In short, the standard model sees law as a device for attaching penalties or "bonuses" to various kinds of conduct that are unpriced or incorrectly priced by market forces.<sup>14</sup>

This model has proven fruitful in many areas of law and economics. But one has to be open to the possibility—especially for laws with symbolic importance such as those articulating our commitment to civil rights—that law can function at a deeper level by shaping peoples' tastes or preferences

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13. Interestingly, this kind of argument relies not on any sort of statistical sophistication but instead on careful and detailed scrutiny of quantitative, qualitative, and historical evidence, something else at which Heckman is also a master.

14. One introductory law and economics textbook puts it this way: "[T]o economists, [legal] sanctions look like prices, and presumably, people respond to these sanctions much as they respond to prices" (Cooter and Ulen 2000, 3). Economists are very attached to this view of the world.

or consciousness instead of merely providing incentives to which they respond. This consciousness-shaping role of law is of course a major theme of law and society research, especially work in the interpretivist tradition. It is also an important element of some of Heckman's work, both substantive and methodological.

Substantively, several branches of Heckman's work have dealt with questions of the transformative nature laws or regulations. His work with John Donohue on the effect of the civil rights revolution of the mid 1960s stresses the power of law not just to alter incentives but to reshape how people think. His work on the Job Training Partnership Act and on the effects of early childhood educational interventions suggest that law's power to shape basic aspects of personality and identity is variable. Early education may teach children how to learn, thereby permanently altering their desire for additional education and in a sense, shaping their very identities. By contrast, job training provided to young adults via the Job Training Partnership Act is largely ineffective, in part because it is incapable of changing the fundamental personality and psychological motivation of trainees once they've reached a certain age.<sup>15</sup>

Methodologically, Heckman has done pioneering work about how to distinguish between "heterogeneity" and "state-dependence" as explanations for change over time. A brief example might help fix ideas. Suppose we observe a group of juveniles for two years and discover that those who were arrested once during the first year face a 25% probability of being arrested in the second year, while those who were not arrested in year one have only a 15% probability of arrest in year two. There are two possible explanations for this phenomenon. One is that the first arrest has a causal effect—those who were arrested were somehow "scarred" by their experience and as a result were more likely to re-offend in the second year than those who were otherwise identical but were not arrested.<sup>16</sup> The other story one might tell is that there was no causal relationship here at all—rather, the people who were arrested were those who had higher (unobservable) propensities to commit crime and hence would be at greater risk of being arrested in year two *even if they had not been arrested in year one*.<sup>17</sup>

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15. The volume of work on these issues is so large that it's hard to know where to begin. A broad overview may be found in Heckman's Wildavsky Forum Lecture, delivered at the Goldman Graduate School of Public Policy at University of California, Berkeley, in April 1999. He discusses some of the issues in an accessible fashion in Heckman 1999.

16. This is the case of state-dependence—one's being in one state of the world (here, arrested) has a causal effect on one's chances of being in another state of the world (re-arrested).

17. This is the case of heterogeneity—persons are sorting themselves on some relevant (and fixed, but unobservable) characteristic that puts them at greater risk of ending up in some state of the world without any causal relationship between exposure in year one and exposure in year two. Note the deep similarity to the earlier discussion of sample selection.



Sorting out the difference between these two competing explanations is often both extremely important and extremely difficult, and Heckman made foundational contributions to the growing literature that seeks to resolve these questions.<sup>18</sup>

## PEOPLE ARE NOT PLANTS: TOWARD A HUMAN-APPROPRIATE SOCIAL SCIENCE

In a typical experiment—the kind you might have done in seventh grade science class—the investigator wants to know the effect of fertilizer (treatment) on the growth rate of plants. She will typically proceed by randomly assigning identical plants to the treatment (fertilizer) and nontreatment (control) group. The difference in, say, the average height of the two groups of plants at the end of the experiment is then used to measure the effect of the treatment. The methodology for assessing the statistical significance of the observed differences has been well worked out for close to 75 years and is not particularly complicated.<sup>19</sup>

In many contexts of interest to social scientists, experimental data are simply not available: Imagine randomly assigning students to parochial vs. public schools, or randomly “assigning” race to “otherwise identical” job applicants.<sup>20</sup> In some circumstances, however, policy interventions have been subjected to experimental evaluations. For example, a job training or welfare reform program might be evaluated by randomly assigning persons to receive the intervention or not and then comparing the success rates on various measures (earnings, employment, and so on) between the control and treatment groups.

This seemingly simple and elegant strategy has much to recommend it, including its appeal to our intuitive understanding of experiments.<sup>21</sup> If people are randomly assigned to the trained or untrained group, you might think, then the difference between the average earnings of the trained and

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18. Among his many contributions in this area, a good place to start is Heckman 1981 and 1991, as well as Heckman and Borjas 1980. I have ignored applications to such areas as demography.

19. The classic work is Fisher 1935.

20. One might randomly assign race to otherwise identical *resumes* of job applicants, but for any job requiring an in-person interview, such assignment is obviously impossible and some sort of matching procedure must instead be followed. For a constructive critique of the use of matched pairs of applicants to test for racial discrimination in hiring, see Heckman and Siegelman 1993, 187. My reading of this paper is that the authors are not critical of the testing endeavor per se but do insist that its limits and implicit assumptions be recognized.

21. Positivist social science has typically been the victim of “experiment envy,” the belief that experimental data are somehow *better* (or more prestigious) because *real* scientists—the folks who work in labs and wear white coats—do experiments. As one imaginative methodologist put it, in most social science research “[t]he data are sliced, chopped, beaten, molded, baked and artificially colored until the researcher is able to serve us proudly with a plate of mock experiment” (Lieberson 1985, 4).

untrained groups should reflect the effect of training, just the way the difference in heights captured the effects of fertilizer in the seventh grade plant experiment.

You might think so, but you would be wrong, and Heckman has probably done more than anyone else to demonstrate why. In so doing, he has in essence made the case that (even) positivist social science needs to be aware of what it means to be human—what makes us different from plants or lab rats. Consider first the effect of randomization on the providers of services, the job training personnel or the welfare workers. Since

[h]umans act purposively . . . their behavior is likely to be altered by introducing randomization into their choice environment. The [standard experimental] model may be ideal for the study of fertilizer treatments on crop yields. Plots of ground do not respond to anticipated treatments of fertilizer, nor can they excuse themselves from being treated. Commercial manufacturers of fertilizer can be excluded from selecting favorable plots of ground in an agricultural experimental setting in a way that training center managers cannot be excluded from selecting favorable trainees in a social science setting. (Heckman 1992, 215)

Randomization will also inevitably influence the composition of program *participation*. If individuals are randomly assigned to receive training or not, the experimenter may be able to say something about the effect of training on those who actually receive it but is unlikely to have much to say about who elects to receive training in the first place.<sup>22</sup>

Not only has Heckman made the anti-experimentalist case, he has gone on to develop a positive alternative—a set of statistical techniques that (a) make explicit the behavioral assumptions being invoked in order to interpret the results of a program evaluation; and (b) without relying on random assignment, allow investigators to uncover many of the underlying relationships of interest, or at least to appreciate the conditions under which such estimates are or are not possible.

It may sound grandiose, but I think what this adds up to, in the end, is a recognition that the study of human interactions can not just lift templates from the physical sciences. It must instead be based on a sense of what makes us distinctly human. Whether one starts from the assumption that people are rational autonomous agents or that they are largely con-

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22. Even randomized drug trials, a paradigm of white lab coat social science, Heckman notes, are subject to this human agency problem: "AIDS patients denied potentially life-saving drugs took steps to undo random assignment. Patients had the pills they were taking tested to see if they were getting the placebo or an unsatisfactory treatment, and were likely to drop out of the experiment in either case or to seek more effective medication, or both" (Heckman 1992, 221).

trolled by culture, law, or power,' this is an insight with which we should all be able to agree.

## CONCLUSION

I could go on, but I won't. James Heckman brings to every problem he confronts—and they are all important ones—not just his extraordinary methodological skill, but the good judgment never to let the technique for finding the answer become more important than the answer itself.<sup>23</sup> Ultimately, however, what makes Heckman the ideal social scientist is his commitment to uncovering the truth about the world. His work is characterized by its fairness, a rare sense of the limits of what can be known and the limits of economics as a way of knowing, and his deep appreciation for the incredible subtlety and complexity with which law interacts with the real world. In this, I suggest, he is a model for all of us to aspire to, regardless of our discipline or methodological paradigm.

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23. The pianistic analog would be someone like Maurizio Pollini or Marta Argerich—or in the jazz world, Bill Evans: artists whose virtuosity is always subservient to the music rather than becoming an end in itself

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